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ABSTRACT

The document presents the results of a preliminary study on the development of job performance aids. Job performance aids are information devices which are applied in actual work situations to assist the worker in the performance of his task. The uses and advantages of job performance aids for the training of Navy personnel are discussed. In order to establish methods of job performance aid development that will have general application, the study developed a categorization of job aid devices based on data collected from a questionnaire designed to gather information on existing attitudes and practices. A set of conversion cards for aiding Commissarymen in recipe conversion was also constructed to determine the feasibility of applying job performance aids to nontechnical ratings. A list of references is included. The survey questionnaire on current practices of job aid implementation and the recipe conversion job aids are appended. (Author/EC)

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ADVANCING THE APPLICATION OF JOB PERFORMANCE AIDS WITHIN THE NAVY: I. DEVELOPMENT OF SYSTEMATIC APPROACHES

by

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SUMMARY AND CONCLUSIONS

Problem

Job performance aids are devices used to simplify the on-the-job execution of a task by supplying workers with additional information. The Naval Personnel and Training Research Laboratory (NPTRL) is conducting an investigation to develop methods for advancing effective application of job aids.

Background and Requirements

Accomplishment of the Navy's mission requires the performance of a multitude of job skills. As a result, a great deal of effort is spent acquiring high level personnel and providing them with effective training programs. It has been suggested that job performance aids can be developed to assist the worker on the job and make the task easier, thereby reducing personnel and training requirements. There have also been indications that job aids can be used to improve task performance. Present-day requirements have placed particular emphasis on increasing the operational efficiency of the military services. Investigation is needed to determine how job aids can best be implemented to reduce training requirements and to optimize efficient task performance within the Navy.

Approach

This report concerns the initial phase of an investigation of methods for furthering the development and application of job performance aids. Preliminary efforts included the gathering of information on the present general state of job aid utilization in order to identify factors which have limited their implementation. Based on this information, methods for maximizing the scope and effectiveness of job aid application were proposed and the development of research materials was initiated. Plans were made to evaluate the appropriateness of methods and materials in terms of the number and quality of the job aids which result from their application.

Findings and Conclusions

A review of the literature confirms that introducing job performance aids into task situations can reduce training requirements and improve task performance. The following factors are believed to have had a limiting effect on effective job aid employment: (1) Lack of conceptual development as a class of devices. (2) Narrow scope of investigation considering only a restricted range of types of devices and task areas. (3) Lack of attention to the general process of job aid development and the establishment of effective methods of job aid implementation.

A program of research is now being conducted to develop and evaluate methods for furthering job aid implementation. Preliminary accomplishments cited in the present report include: (1) Design of a categorization of job performance aids. (2) Construction of a survey questionnaire for gathering data on present conditions of job aid application within Navy ratings. (3) Development of a job performance aid within the context of a nontechnical Navy task area.

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ADVANCING THE APPLICATION OF JOB PERFORMANCE AIDS WITHIN THE NAVY: I. DEVELOPMENT OF SYSTEMATIC APPROACHES

A. Introduction

1. Improving Job Performance

There are a number of different ways of improving job performance. One method is to be selective in the personnel that are used. Personnel who are more experienced or have greater aptitude for the work can be selected. Another method is to provide better training for the workers. Improvement through training can be achieved either in the classroom or on the job. Still another way to improve job performance is to simplify the job and make it easier; there are two different approaches. One is to change the job itself; the other is to provide some sort of device to assist the worker. This report is concerned with the development of devices which provide on-the-job assistance to the worker. Such devices are commonly referred to as job performance aids.

2. Purpose of Research

This is the first in a series of reports by the Naval Personnel and Training Research Laboratory (NPTRL) covering investigations designed to further the effective application of job performance aids. The use of job performance aids to simplify work situations is not a new concept. Many such devices are, in fact, commonly used. In work areas such as electronics maintenance, efforts to expand the use of job aids through systematic programs of development have been highly successful. The present investigation is an effort to explore methods for systematically expanding the implementation of job performance aid devices. In this case, consideration is being given to the development of job aids for application to a wide variety of task situations. This report covers efforts to establish what needs to be done in order to advance effective job aid application and the formulation of a plan of research to satisfy these needs. Some preliminary accomplishments are also cited. Future reports will describe efforts to generate ideas for new job aid devices and to evaluate the effectiveness of the methods employed.

B. The Nature and Role of Job Aids

1. What is a Job Aid?

The familiar set of instructions for assembling a bicycle is a common example of a job performance aid. The job performance aid is, basically, a device that provides information to facilitate on-the-job performance of a task. Thus, the distinction between job aids and training aids is that job aids are applied in an actual work situation. The distinction between job aids and

mechanical tools is that job aids provide information rather than a physical advantage. These specialized characteristics of job aids are illustrated in Figure 1.

2. Uses and Advantages

Navy task requirements involve the performance of a tremendous assortment of job skills. In order to satisfy job-skill requirements, the Navy must spend a great deal of time and money recruiting high ability personnel, providing specialized training, and maintaining skill levels by means of constant practice. Effective application of job aids could provide alternative ways of achieving and maintaining the required job skills. Chalupsky and Kopf (3) have published a report citing 16 studies in which job aid devices were applied and evaluated. Reported advantages included:

a. lowered personnel requirements,

b. reduced training requirements,

c. improved task efficiency, and

d. elimination of costly errors.

Figure 2 illustrates how the application of job performance aids can be useful to the Navy.

3. Specific Applications to Current Navy Needs

A systematic program of job aid development appears to be particularly well suited to Navy operational requirements. The types of situations where job aids can be used effectively are just those situations where the Navy needs to develop more effective work and training procedures.

By making information available which would otherwise have to be memorized by the worker, job aids provide alternatives to training. The Navy needs acceptable alternatives to training. As the rate of technological innovation has accelerated, the operations that our military personnel must perform have become more and more complex. Greater task complexity has meant heavier training requirements and longer training periods. By providing an alternative to training, job aids can shorten the amount of time the trainee must spend receiving instruction.

Job aids also can be used to upgrade the performance of individuals who are difficult to train. Changes in recruitment policies have brought into the Navy large numbers of personnel who previously would have been considered unqualified. Such personnel show relatively poor performance in Navy Class A schools (12, 13, 19, 20, 21). Where high levels of job performance are critical, job aids may be used to simplify a task to a level where even marginal personnel can perform satisfactorily.

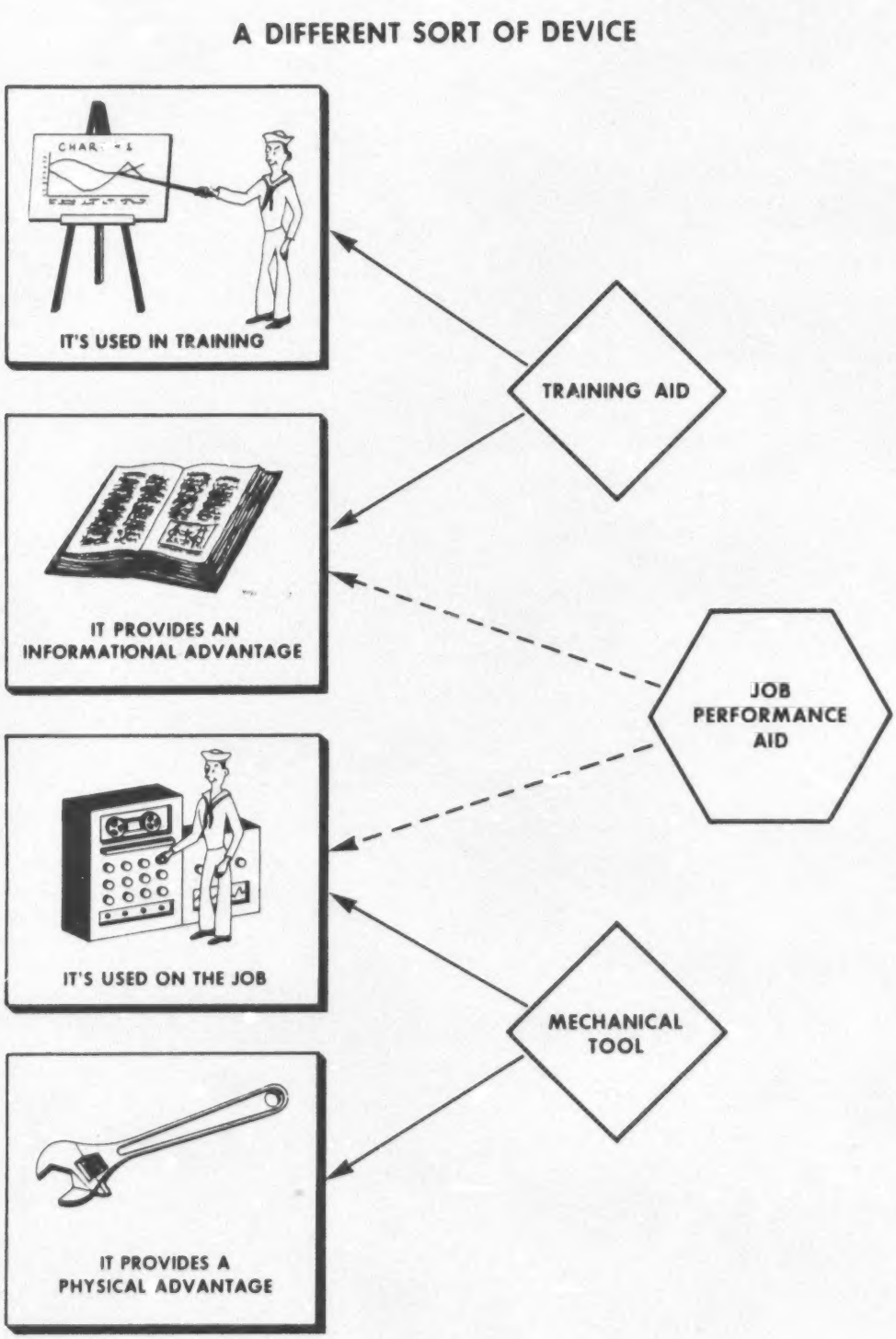

Figure 1. Specialized Characteristics of Job Performance Aids

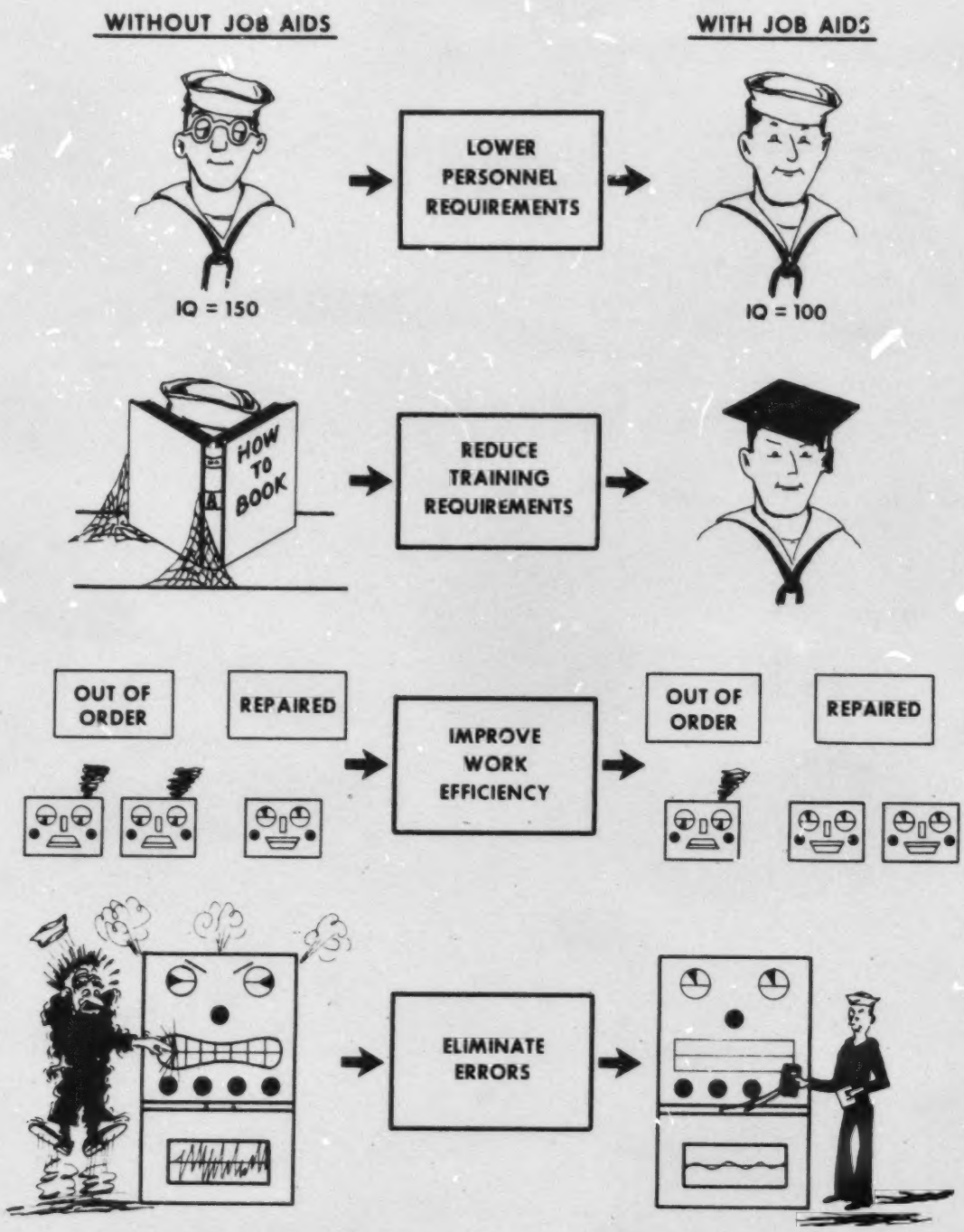

Figure 2. Uses and Advantages of Job Performance Aids

Developing the military skills of foreign nationals can present training problems. The degree of technical skill required by the tasks which must be mastered may exceed the abilities of the available manpower. Language barriers which frustrate communication between instructor and student may further complicate conventional training processes. Here again, job aids could provide an effective alternative to training.

In addition to being useful as alternatives to training, job aids have been used to attain high levels of productivity. In a recent news article, a Navy official has stated that the United States may have to prepare for a smaller but "stronger, more professional fighting force." Devices that have the potential to increase the productivity of Navy men deserve considerable attention at a time when budget cuts and reductions in force are probable.

Given the present demands for alternatives to training and for methods to increase productivity, an effort to further the implementation of job aid devices appears amply justified.

C. Factors Which Have Limited Effective Utilization

1. Conceptual Development

Considering that job aids have been found to be so effective as a means of assisting job performance, it is interesting to note that, as a class of devices, they have received little attention. At the worker level, recognition of the conceptual identity of job aids is almost unknown. In preparation for the development of a survey questionnaire, NPTRL investigators interviewed Navy Chief and First Class Petty Officers from a variety of ratings in regard to the use of job aids within their work areas. Some difficulty was experienced trying to explain just what a job aid is, what physical forms such devices might take, and what functions they might serve. These Navy personnel did not recognize job aids as a class of devices.

Folley and Munger (9) concluded, upon completing a survey of job aid research in 1961, that lack of conceptual organization has resulted in piecemeal research. This is still the case. Most recent studies are still concerned only with the application of a specific device to a particular task.

Although little has been done to develop the conceptual unity of job aids, some recognition has been given to the fact that a more systematic and unified approach is needed. Chalupsky and Kopf contrast the field of job aid development to the field of training where there has been developed ". . . a rich body of knowledge, basic concepts, and principles (3, p. 51)." Wulff and Berry (22) have drawn attention to the importance of job aid development as part of the process of systems development. Folley (7) has demonstrated the feasibility of establishing systematic procedures to guide the development of job aids.

2. Scope of Application

Another factor which has restricted effective employment of job performance aids is limited application. Research has been restrictive both in terms of the types of devices that have been considered and the types of work situations to which the devices have been applied. Investigations of job aid effectiveness have, for the most part, dealt with maintenance manuals and audio-visual equipments. However, a great variety of other materials--instruments, equipments, book charts, etc.--could be used. Some progress in the application of these less frequently utilized devices has been made. Isolated studies have demonstrated that such aids as conversion charts (14), manually-operated fault-locating devices (17, 18), and filing aids (16) can be implemented successfully. There have been proposals for the development of specialized slide rules (15), nomographs (2), automated navigation maps (5), and pocket-size informational cards for junior officers (1).

The effective employment of job aids may involve not only a wide variety of devices but a broad range of task situations as well. In practice, little effort has been expended to explore the possibilities for extending systematic job aid application to new work areas. Civilian studies have typically limited their interest to assembly-related tasks while military research has been concentrated on the operation and maintenance of electronic equipments. There is reason to believe, however, that job performance aids could be applied effectively in other work areas. Chalupsky and Kopf claim that a definite need for job aid development exists in the area of patient care. They further conclude that ". . . a systematic program in this area could have significant impact . . . upon many other work areas as well (3, p. 64)."

3. Principles of Development

In their investigations of specific job aid applications, researchers have ignored the general process of job aid development. Little data are available to indicate how job aid development should take place or how techniques for advancing job aids should be employed. A consideration which deserves particular attention is the role of the worker-user in the process of job aid development. Findings in the field of social psychology have indicated that, in establishing new work procedures, involvement of the worker can be a critical factor. In a classical study, Coch and French (4) found that textile workers who were allowed to participate in establishing new work procedures accepted changes more readily and were easier to retrain. Creating worker acceptance will be an important accomplishment for a program of job aid advancement.

The involvement of workers could have benefits beyond the creation of positive attitudes. Workers may be able to provide significiant contributions to the process of job aid development.

Folley and Shettel (10) found that maintenance personnel could, on demand, produce an analysis of their operations similar to that developed by task analysts. The degree to which working personnel can contribute to the development and evaluation of job aids has yet to be determined.

D. Furthering Recognition and Implementation

1. Initial Accomplishments

Recognizing that a more unified and systematic approach is needed, the goal of the present investigation is to establish methods of job aid development that will have general application. If job aid development is to be dealt with in a comprehensive manner, it is necessary to be able to specify what types of devices may be used as job aids and the types of situations to which they can be applied. In order to provide a more comprehensive view of job aid application, a categorization of job aid devices was developed.

It was felt that, in order to develop methods for furthering job aid application, it would be important to know what attitudes and practices already exist. A survey questionnaire was developed for that purpose.

Finally, an effort was made to determine the feasibility of applying job performance aids to nontechnical ratings. A set of conversion cards for aiding Commissarymen in recipe conversion was constructed and informally evaluated.

A description of these preliminary accomplishments and of plans for the continuation of this investigation are contained in the following pages.

2. A Categorization of Job Performance Aids

One may wonder why job aids have received so little attention as a class of performance aiding devices. Perhaps as Chalupsky and Kopf have suggested ". . . the very pervasiveness of job aids accounts for the lack of a unified approach. Being surrounded by informational aids of one sort or another, we have failed to recognize that, regardless of their dissimilarity, these aids share common objectives, common functions, common problems (3, p. 51)."

The state of job aid application may be compared to that of a puzzle with scattered pieces. Until they are properly arranged, the relationships among the pieces cannot be recognized. As is illustrated in Figure 3, we need to bring the pieces together. In order to construct a unified view of job aid application it is necessary to specify what pieces belong to the puzzle and how they should be organized.

To complete the picture:

We need to put the pieces together.

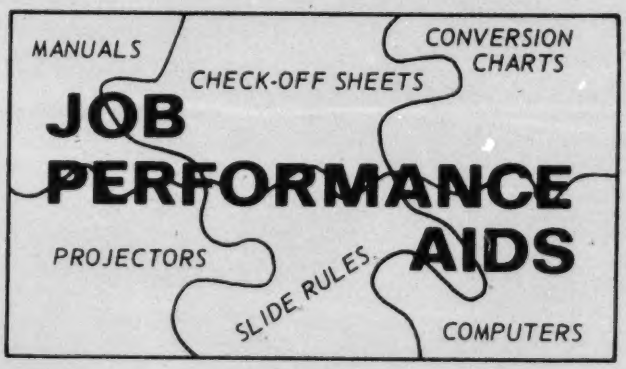

Figure 3. Job Aids: An Uncompleted Picture

To ask what pieces belong to the puzzle is to consider what set of devices should be recognized as job aids. Researchers have assigned a variety of characteristics to job aid devices. For example, Folley (8) has argued that, to be a job aid, a device must augment the normal operational environment in the form of auxiliary equipment. Considering job aids from the viewpoint of systems development, Wulff and Berry (22) suggest that any device which is designed to serve the function of a job aid should be considered as one. Some investigators have promoted a more restrictive concept of job aids. Foley, for example, defined a job aid as ". . .something a maintenance man uses to guide himself . . . (6, p. 1)," while Hoehn and Lumsdaine specify that the function of job aids is to ". . . channelize technicians' behavior along efficient courses of action (11, p. 2)." Despite such divergent points of view, it is generally agreed that:

a. The function of a job aid is to support the on-the-job performance of a work task.

b. Job aids facilitate task performance by providing information.

The above characteristics may be used as criteria to identify what pieces belong to the puzzle. To complete the picture, however, the parts must be organized into a structural unity. A comprehensive categorization of job aid devices is needed.

Several investigators have suggested dimensions for structuring a categorization of job aids. Chalupsky and Kopf (3) list five possible bases for organizing job aids:

a. Impact on task content.

b. Time of use.

c. Information function.

d. Information format.

e. Sensory channel employed.

It is difficult, however, to develop a unified conceptual structure of job aid application along any single dimension. Aids that serve the same function often differ in their physical attributes. Many aids of similar appearance do not serve the same function. Folley (8) has brought a happy solution to this classification dilemma by devising a two dimensional categorization. He constructed a 2 X 3 matrix based on the conditions under which the aids are brought into use and the types of behaviors which are aided. The resulting six-cell classification of performance aiding is pictured in Figure 4.

	Behavior Process		
Type of Use	Input	Processing	Output
Reference			
Cooperative			

Figure 4. Folley's Categorization Matrix

Unfortunately, Folley's development of his two dimensional categorization is somewhat complex and difficult for the layman to apply. In order to provide a categorizatiom that would clearly illustrate the set of devices that would be considered as job aids, a modified version of Folley's categorization matrix was developed (see Table 1). In this version, job aids are grouped according to the physical characteristics of the device used to present information and according to how the information functions to support the worker's behavior.

The "Function of Information" dimension is somewhat similar to Folley's "Behavior Process" heading. The first function of information is just to provide data to the worker. In this case, the job aid acts as a storage of factual material relevant to the task. It does not modify the worker's task and does not specify the correct behaviors. The second function of information is to eliminate processing. Here, the job aid is used as an alternative to computational or diagnostic operations, thus changing the nature of the task. The third function of information is to direct behavior. In this situation the worker's task is not modified but he is carefully guided into following correct procedures.

Referring again to Table 1, it may be seen that the second dimension of NPTRL's categorization relates to the physical characteristics of the devices. On the dimension of "Physical Characteristics," job aids are grouped into three different types of devices: printed materials, manual devices, and powered apparatus.

Having organized job aids into a nine-cell 3 X 3 matrix, a listing was made of the different types of devices that would be included within each cell. The listing is meant to be illustrative of the types of job aid devices that may be applied to Navy task situations.

3. Development of a Survey Questionnaire

Little information has been published about the present state of job aid application within the Navy. In order to conduct an effective program for advancing the use of job aids, it is desirable to have some conception of current practices and attitudes. A survey questionnaire was developed for this purpose.

TABLE 1

A 3 X 3 Categorization Matrix of Job Performance Aids With Listings of Examples of Currently Used Devices

Physical Characteristics Of Job Aids	How Information Provided By Job Aids Helps The Worker		
	Provides Data	Eliminates Processing	Directs Behaviors
Printed Materials	Reference books Periodicals Equipment manuals Filing cards and labels	Charts, tables or graphs which compute or convert values, such as square root tables.	Warning signs Form sheets Checkoff sheets Assembly instructions Operational guides Maintenance guides
Manual Devices	Hand operated roll charts or maps	Special instruments that aid computation, such as slide rules and shrink rules.	Small handheld performance guides which may be manipulated to present directions in limited units.*
Powered Apparatus	Computer information storage. Projector information storage (micro-film and micro-fiche)	Computers programmed to calculate or diagnose. Diagnostic test equipments	Audio-visual equipments which illustrate correct work procedures. Warning lights and other such indicators.

Note.--

*An example of such a contrivance is an experimental fault locator (XFL) designed for the Navy by Rigney (17, 18). The aid consisted of a small circular plastic object and functicned as a guide for radio operators in the troubleshooting of the AN/URC-32.

The design of the questionnaire was based on information acquired from preliminary contacts with senior Navy enlisted personnel. From such interviews it was discovered that few of these personnel were familiar with the concept of job performance aids. Before they could provide useful information, it was necessary for interviewers to explain in some detail what a job aid is. A modification of the categorization of job aids presented in Table 1 and the illustrations presented in Figures 1 and 2 were incorporated into the questionnaire to eliminate the need for such detailed explanations.

The major portion of the questionnaire is designed to provide information on current practices of job aid implementation--how they are developed, how widespread is their use, how practices of application vary from rating to rating, and how effective they are. Since consideration is being given to the role workers can play in the process of job aid development, the remainder of the questionnaire is concerned with attitudes of enlisted men, namely, how they feel about using job aids and whether or not they would be interested in providing suggestions for new job aid applications. The questionnaire is displayed in Appendix A.

4. Investigation of a Nontechnical Application

Considering that most of the attention given to the development of military job aid applications has centered on highly technical areas, a point of concern is whether a program of job aid development will prove successful when applied to nontechnical ratings. Where skill requirements are minimal there may be less need for performance aiding devices.

In order to provide some indication of the potential for job aid development within nontechnical areas, contacts were made with personnel from the Commissaryman rating. Interviews were held with Chief Petty Officers who were involved in developing training materials for Navy Class A and C Schools. It was found that aids for improving job performance were needed, and the process of recipe conversion was identified as an example of a task situation where personnel were experiencing difficulty.

A practical demonstration of how job aids can be applied effectively to nontechnical tasks occurred in the following manner: After receiving a brief description of the processes involved in recipe conversion, an NPTRL investigator, assisted by Commissaryman Chief Petty Officers, proceeded to design a set of conversion cards which can be used to simplify such computational procedures. The conversion data were printed on cards of a type similar to those used for displaying Navy recipes. Two of these cards are shown in Figure 5; the complete set is presented in Appendix B.

A group of Commissaryman instructors were asked to evaluate the cards in terms of their potential for practical application to work situations. Although skeptical at first, they became enthusiastic

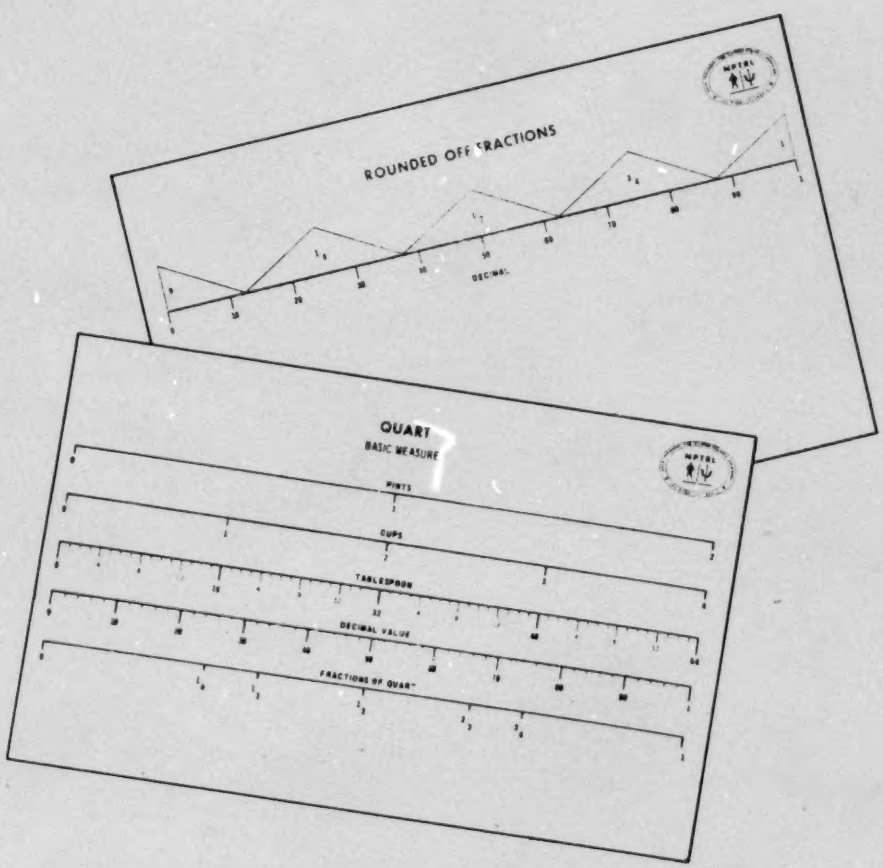

Figure 5. Job Aid Cards for Recipe Conversion

when they saw the cards demonstrated. One instructor estimated that, by using these cards on the job, a Commissaryman could save up to an hour and a half per day. Several asked where they could obtain the cards for their own personal use. The Class A Commissaryman School has since requested and received permission from NPTRL to introduce the "Rounded Off Fractions" card into their course work. The other cards will also be made available following experimental evaluations. To the degree that one can accept instructors' enthusiasm as an objective indicator, it appears that a very limited effort to further job aid application can produce useable performance aiding devices, even within a nontechnical rating.

It is interesting to speculate on the significance of the above findings. That an investigator, untrained and unexperienced in Commissaryman work procedures, should initiate solutions to problem task situations to assist experienced and competent personnel is worth consideration. Perhaps having a mental set to look for possible job aid applications is what makes the difference. If directing attention to possibilities for job aid development does result in such innovation, then a general effort to stimulate the thinking of Navy personnel along these lines should have far-reaching effects.

5. Future Plans

The apparent success of the attempt to facilitate recipe conversion procedures illustrates the need for an expansion of the scope of job performance aid implementation. The continuation of this experimentation focuses on the development and evaluation of procedures for encouraging such expansion.

Investigation is proceeding as follows: First, several Navy ratings are being selected as work areas in which methodologies for advancing job aid implementation can be experimentally evaluated. Attention is being given to Navy ratings which involve a variety of skills and include tasks which are representative of many types of Navy jobs. Ratings that involve work with electronic equipments will be avoided on the grounds that so much investigational effort has already been applied in this field.

The survey questionnaire which is displayed in Appendix A is being used to establish current practices of job aid implementation. It has been pointed out that the role workers can play in developing job aids should be established. Methods for involving workers in the development of job performance aids are, accordingly, being investigated. Different approaches for soliciting information will be attempted in order to determine the effort required to generate productive suggestions. The relative effectiveness of questionnaires and interviews will be compared. How well these methods can elicit new ideas for job aid applications will be measured in terms of the number and quality of the suggestions. Suggestions that are judged to have practical merit will be evaluated under laboratory conditions. Wherever possible, follow-up evaluations will be conducted in the field.

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APPENDIX A

Survey Questionnaire on Current Practices of
Job Aid Implementation

INSTRUCTIONS

Why Have You Been Sent This Questionnaire?

You are one of a small sample of Navy personnel that has been selected to answer some questions about job aids and how they are used in the Navy.

What is a Job Performance Aid?

In contrast to the more familiar training aid, a job performance aid is used on the job. Job aids are used to simplify a task by providing the worker with additional information.

What Types of Devices May Be Used As Performance Aids?

Any device that supplies information to assist the man on the job may be considered as a job performance aid. A simple lubrication checkoff sheet and a complex computer system are both examples of job aids.

Under What Conditions Are Job Aids Particularly Useful?

Job aids can be helpful in a number of ways. They may be used to assist workers who lack the training or ability to do the job on their own. Some skills that are seldom required under normal working conditions must, nevertheless, be maintained at a high level. For these critical tasks, job aids may be adopted to eliminate much of the need for extensive drill. Where errors are costly, job aids can direct correct procedures. They may be used temporarily while new skills are being mastered or may be permanently implemented into the work situation.

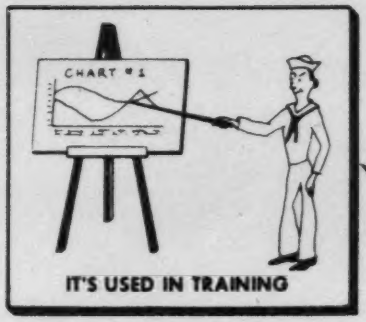
Where Do You Come In?

It is difficult for an outsider to come in and tell a professional how he should do his work. If you want to improve a work situation, go to the man who has had experience in getting the job done. This is where you come in. Because of your experience, you can provide valuable information about the use of job aids within your rating. Our goal is to establish systematic procedures for developing effective job aids. We hope you share our belief that such an effort merits serious consideration.

How Can You Help?

The following pages contain some illustrations of what job aids are and how they are used. Look these over carefully, then complete the enclosed questionnaire.

A DIFFERENT SORT OF DEVICE



IT'S USED IN TRAINING

TRAINING AID

IT PROVIDES AN INFORMATIONAL ADVANTAGE

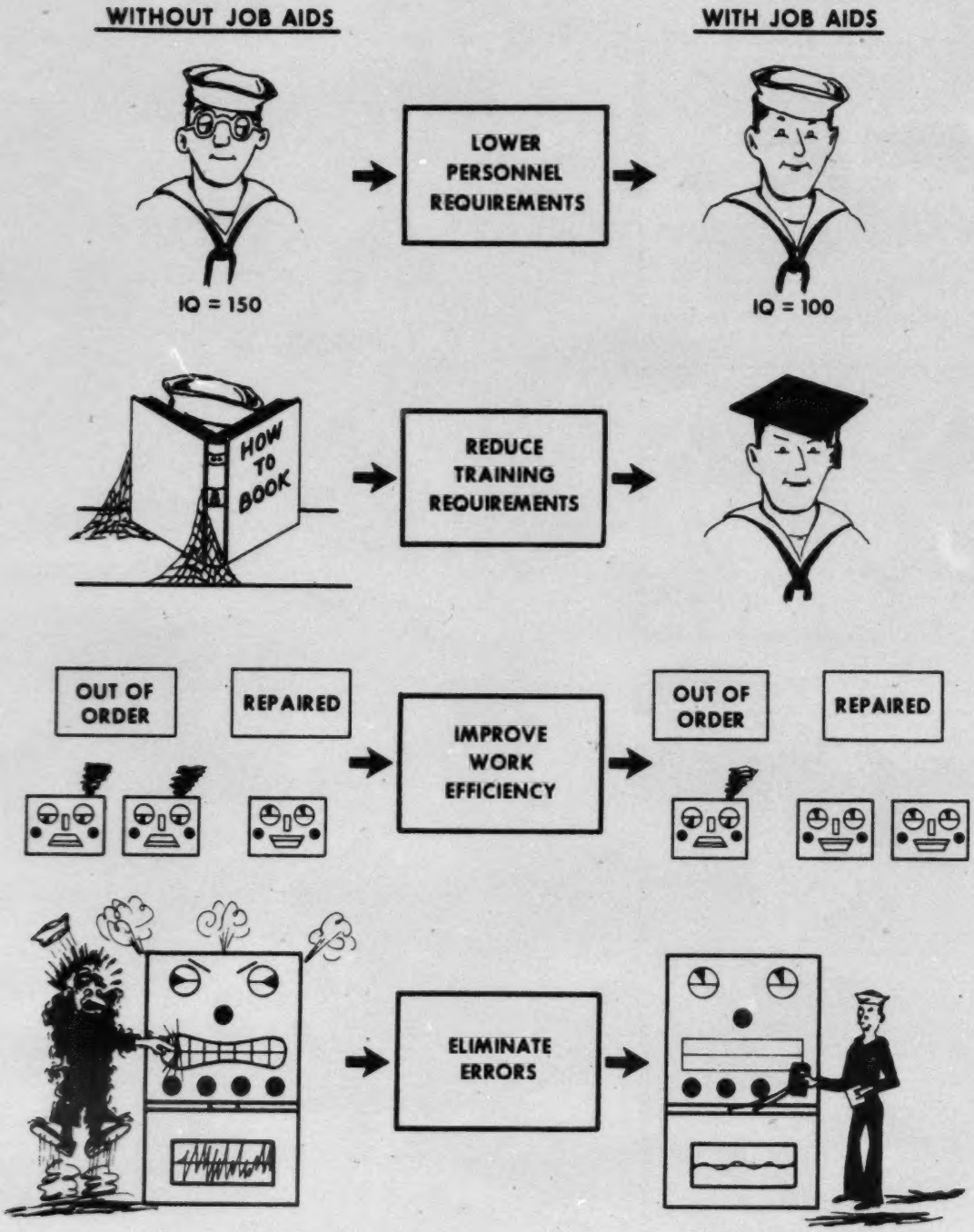
JOB PERFORMANCE AID

IT'S USED ON THE JOB

MECHANICAL TOOL

IT PROVIDES A PHYSICAL ADVANTAGE

JOB PERFORMANCE AIDS CHANGE THE PICTURE



An Organized Listing of Job Performance Aids

Physical Characteristics Of Job Aids	How Information Provided By Job Aids Helps The Worker		
	Provides Data	Eliminates Processing	Directs Behaviors
Printed Materials	Reference books Periodicals Equipment manuals Filing cards and labels	Charts, tables or graphs which compute or convert values, such as square root tables.	Warning signs Form sheets Checkoff sheets Assembly instructions Operational guides Maintenance guides
Manual Devices	Hand operated roll charts or maps	Special instruments that aid computation, such as slide rules and shrink rules.	Small handheld performance guides which may be manipulated to present directions in limited units.
Powered Apparatus	Computer information storage. Projector information storage (micro-film and micro-fiche)	Computers programmed to calculate or diagnose. Diagnostic test equipments	Audio-visual equipments which illustrate correct work procedures. Warning lights and other such indicators.

Name _____ Rate _____ Date _____

QUESTIONNAIRE ON THE USE OF JOB PERFORMANCE AIDS

(Please print or type your answers.)

What Do You Know About Job Aids?

1. Have you heard the term "job performance aid" used before?

Yes_____ No_____

If yes, what sort of devices were being considered?

_____

_____

_____

_____

_____

2. Are there any specialized performance aids that are used in your rating which are not covered by our listing?

Yes _____ No_____

If so, please describe.

_____

_____

_____

_____

Developing Job Aids.

3. Estimate, for your rating, the percentage of job aid innovations which have come from each of the following sources. (Be sure that your total adds up to 100%.)

Ships and shore activities (other than schools).

Strikers	_____%
Petty Officers	_____%
Officers	_____%
Navy schools	_____%
Navy bureaus	_____%
Civilian sources	_____%
Others	_____%
Total	100 %

4. Are you aware of any activities, publications, or other sources (other than Benny Suggs) which request suggestions for job aids?

Yes_____ No_____

If yes, identify the source or sources of the requests.

_____

_____

_____

_____

5. How many times, if any, have you seen a suggestion for a job aid submitted through a Benny Sugg?

Never _____
Once or Twice _____
Often _____

6. Have you personally ever developed a job aid device?

Yes_____ No_____

If yes, indicate how many aids you have developed while serving at each of the following types of duty stations.

Sea duty _____

Navy schools _____

Other shore duty _____

7. Are you aware of any job aids currently being used within your rating which should be eliminated, replaced, or modified?

Yes_____ No_____

If yes, approximately how many different situations can you think of where job aids are presently inadequate?

One or two _____

Three or four _____

More _____

Putting Out Job Aid Information.

8. Are you aware of any Navy or civilian periodicals (magazines, newsletters, etc.) that publish suggestions for new job aids which might be used within your rating?

Yes_____ No_____

If yes, identify the periodicals.

_____

_____

_____

_____

9. Are you aware of any Navy or civilian reference books or catalogues which contain listings of job aids?

Yes_____ No_____

If yes, identify the materials.

_____

_____

_____

_____

10. In your contacts with personnel from other ships or stations, how often have you either offered or received suggestions for job aid devices?

	Received	Offered
Never	_____	_____
One or two times	_____	_____
Three or four times	_____	_____
More	_____	_____

11. In your opinion, how adequate are present procedures for publicizing and organizing information about job aids?

Publicizing

Good_____
Fair_____
Poor_____

Organizing

Good_____
Fair_____
Poor_____

Your Experience

Sometimes personnel must work in areas which fall outside of their specialty. We are asking the next two questions to determine if your recent experience has been directly related to your rating.

12. How long have you held your present rate?

Years_____ Months_____

13. In the past four years, what percent of your work time has been spent performing or supervising tasks which are directly related to your rating?

_____%

Your Involvement

The following questions are concerned with how you would feel about becoming involved in an effort to advance the use of job performance aids. Qualify your answers as appropriate.

14. Do you feel that there are task areas within your rating where job aids are needed because of the difficulty of the task or because qualified, experienced personnel are not available?

Yes_____ No_____

Comments_____

15. Would you be interested in contributing ideas and information to help advance the use of performance aid devices within your rating?

Yes_____ No_____

Comments_____

16. Below is a list of methods which could be used to solicit suggestions for new job aid applications. Indicate how effective you feel each method would be by placing a check in the appropriate space.

	Very Effective	Effective	Somewhat Effective	Not Effective
a. Questionnaires	_____	_____	_____	_____
b. Written correspondence	_____	_____	_____	_____
c. Person to person interviews made by:				
Civilians	_____	_____	_____	_____
Navy personnel who share your rating	_____	_____	_____	_____
Navy personnel from other ratings	_____	_____	_____	_____
d. Group discussions led by:				
Civilians	_____	_____	_____	_____
Navy personnel who share your rating	_____	_____	_____	_____
Navy personnel from other ratings	_____	_____	_____	_____

17. Have you any further comments or suggestions concerning the development and use of job performance aids?

_____

_____

_____

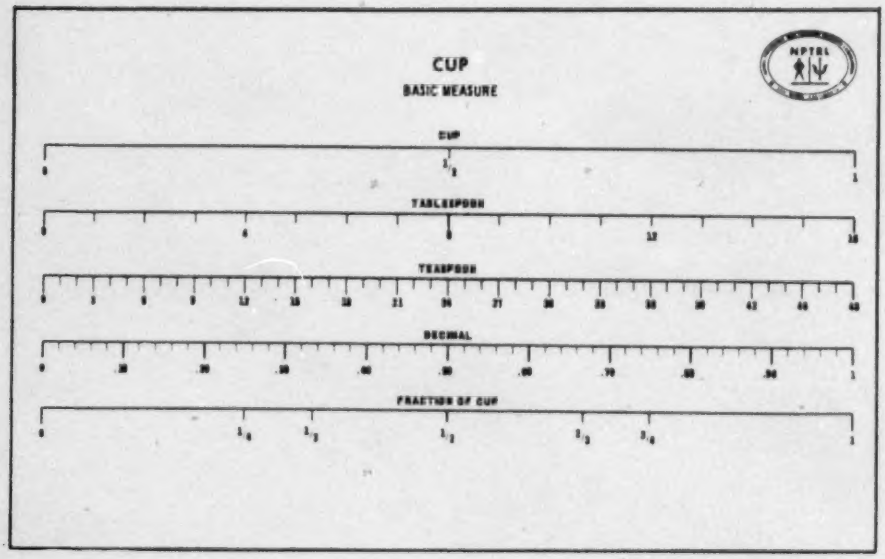
_____

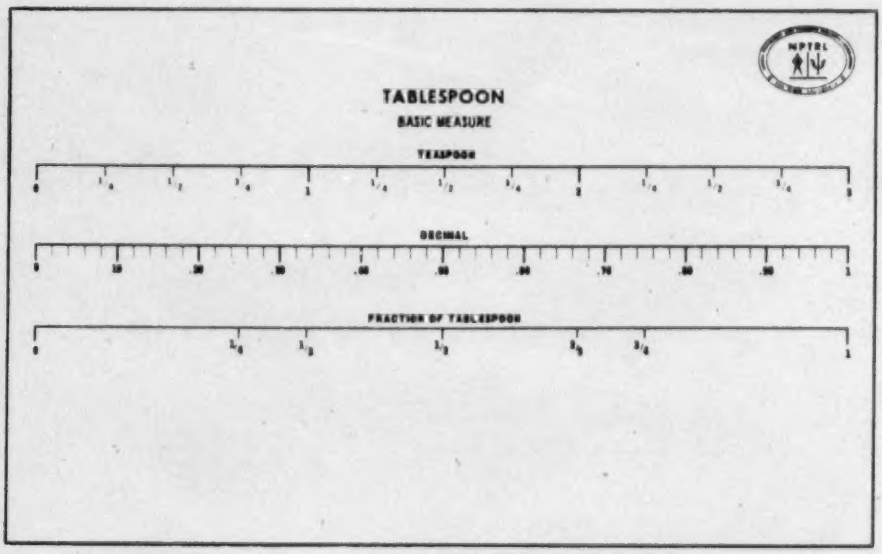
_____

_____

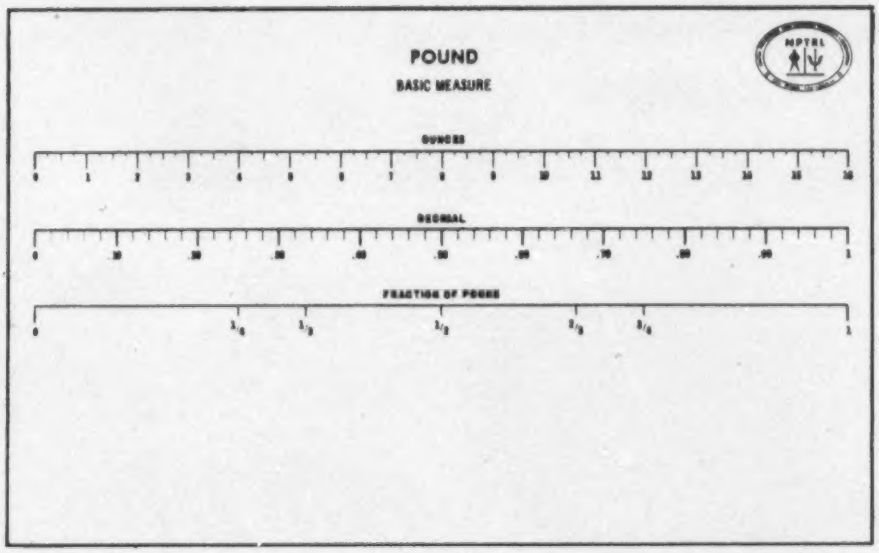
APPENDIX B

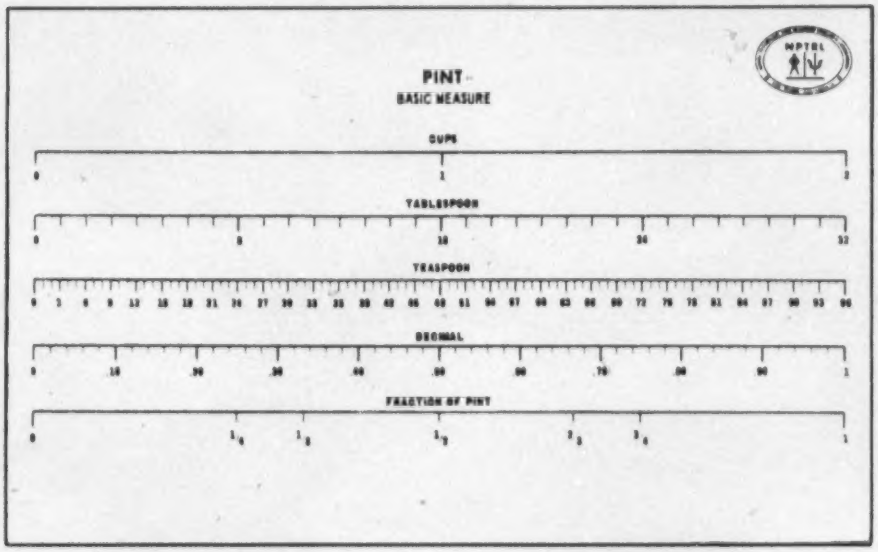
NPTRL Recipe Conversion Job Aids


CUP
BASIC MEASURE
CUP
TABLESPOON
TEASPOON
DECIMAL
FRACTION OF CUP

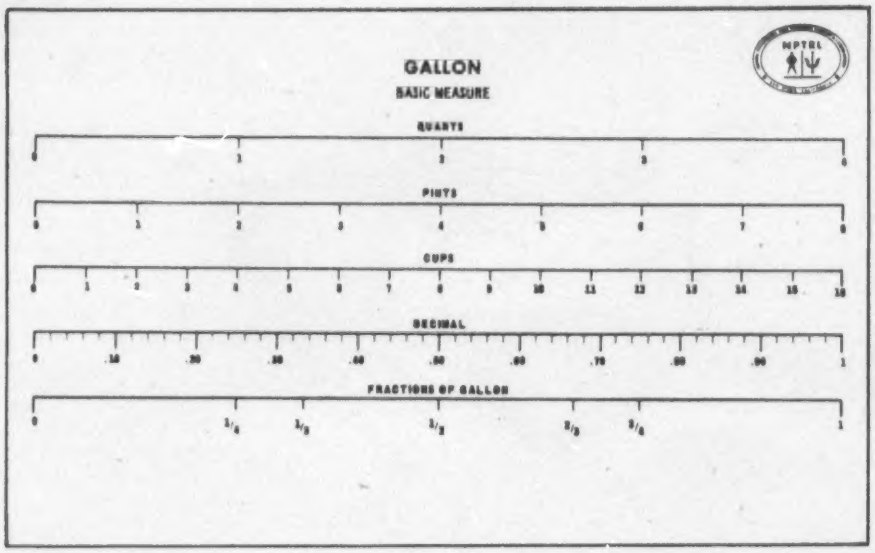

TABLESPOON
BASIC MEASURE
TEASPOON
DECIMAL
FRACTION OF TABLESPOON

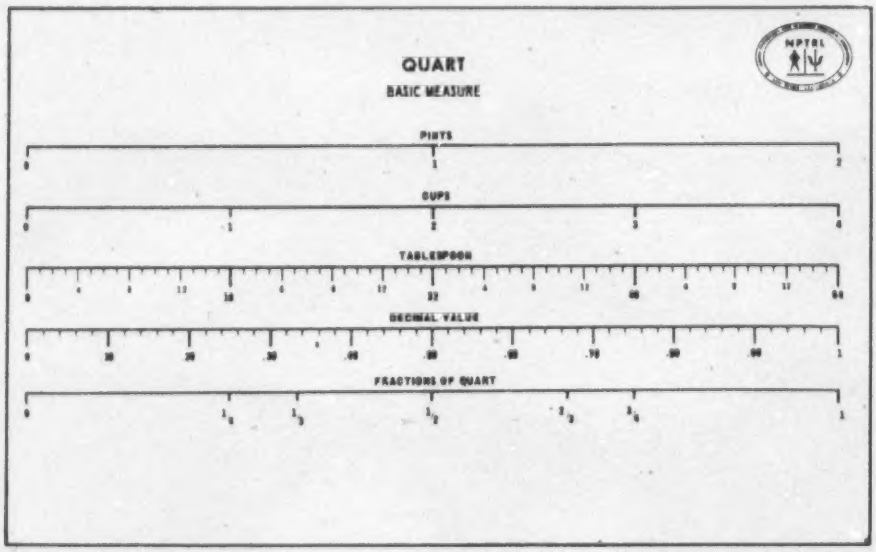
37

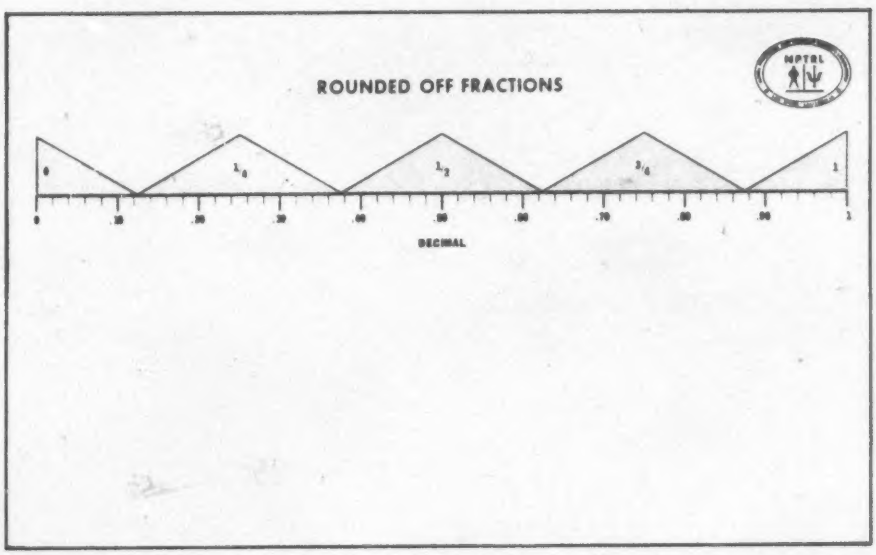

POUND
BASIC MEASURE
NPTRL
OUNCES
DECIMAL
FRACTION OF POUND


PINT
BASIC MEASURE
NPTRL
CUPS
TABLESPOON
TEASPOON
DECIMAL
FRACTION OF PINT

33


GALLON
BASIC MEASURE
QUARTS
PINTS
CUPS
DECIMAL
FRACTIONS OF GALLON


QUART
BASIC MEASURE
PINTS
CUPS
TABLESPOON
DECIMAL VALUE
FRACTIONS OF QUART


ROUNDED OFF FRACTIONS
0
1/4
1/2
3/4
1
0
.25
.50
.75
1
DECIMAL

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13. ABSTRACT

This is the first in a series of reports by the Naval Personnel and Training Research Laboratory (NPTRL) covering investigations of the use of job performance aids. A job performance aid is a device designed to provide information to assist the worker in on-the-job task situations. This report concerns initial efforts to identify methods for furthering job aid development and implementation. Included in this report are the results of a literature review which confirmed that introducing job aids into task situations can reduce training requirements and improve task performance. Factors which are believed to have had a limiting influence on job aid employment are discussed. Preliminary accomplishments are cited including (1) Design of a categorization of job performance aids, (2) Construction of a survey questionnaire for gathering data on present conditions of job aid application within Navy ratings, and (3) Development of a job performance aid within the context of a nontechnical Navy task area. (U)

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